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U.S. EPA Environmental Technology Verification (ETV) Program

Advanced Monitoring Systems (AMS) Center

Water Stakeholder Committee Teleconference

Wednesday, May 27, 2009

Attendees

Stakeholder Committee Members:

Joel Allen, EPA

John Carlton, Alabama Dept. of Environmental Management (*retired*)

Tom Gargan, U.S. Army Center for Environmental Health Research

Christine Kolbe, Texas Commission on Environmental Quality

Max Lee, Dow Chemical

Marty Link, Nebraska Department of Environmental Quality

Alan Mearns, Hazardous Materials Response Division, National Oceanic and
Atmospheric Administration (NOAA)

Vito Minei, Suffolk County Department of Health Services

Rick Sakaji, East Bay Municipal Utility District

Ken Wood, DuPont Corporate Environmental Engineering Group

Observers:

Dick Burrows, U.S. Army Center for Health Promotion and Preventive Medicine

Will Myers, Nebraska Department of Environmental Quality

Dave Schumacher, Nebraska Department of Environmental Quality

ETV AMS Center Staff:

Amy Dindal, Battelle

Teresa Harten, EPA

Michelle Henderson, EPA

Ryan James, Battelle

John McKernan, EPA

Rachel Sell, Battelle

Welcome

Rachel Sell, Battelle AMS Center Stakeholder Coordinator, welcomed committee stakeholders and AMS Center staff, took roll call of the participants in the teleconference, and provided an overview of the agenda.

ETV Updates and AMS Center News

Dr. John McKernan, AMS Center EPA Project Officer, announced that the ETV AMS Center has received support from the EPA Environmental Technology Council (ETC) to fund four proposals for verification of water monitoring technologies:

- Evaluation of Nitrate Sensors for Groundwater Remediation Monitoring
- Pathogen Monitors for *E. coli* and Total Coliforms in Water
- Testing Toxic Blue-Green Algae for Microcystins in Freshwater Sources
- Monitoring Technologies for Measuring Stored Carbon Dioxide from Sequestration Applications.

These technology categories have been priorities for the AMS Center stakeholders. All four projects will involve AMS testing of novel and potentially cost-effective monitoring technologies to provide results in short time frames. The four proposals were selected from more than 20 monitoring technology proposals submitted to the ETC for consideration.

There already are some vendors interested in testing. Oklahoma Department of Agriculture has sites for the nitrate sensor evaluation, Nebraska Department of Environmental Quality (NDEQ) for microcystins, and EPA Region 7 for carbon sequestration.

Discussion of New Technology Categories

Dr. Ryan James, Battelle, provided an update on microcystins and *E.coli* monitoring technologies. The stakeholders followed along with the presentation on slides received before the teleconference. Dr. James covered:

- Immunoassay Test Kits for Microcystins
It has been four years since the stakeholders expressed interest in this approach, and now, with new funding, testing will be able to start this summer. We will work with Marty Link and Dave Schumacher at Nebraska DEQ, which has an extensive sampling program this summer. Marty Link (Nebraska DEQ) said that an incident in 2004, in which several dogs died, prompted testing of beach water which showed the presence of microcystins. Now the state samples 49 beaches per week. Samples are collected on Mondays and Tuesdays, then frozen/thawed/run using an Abraxis test kit, with results available by the end of the week. We will piggyback on this program, and probably do tests at their facilities in Nebraska. Marty mentioned that their microcystin health alert level is 20 parts per billion (ppb). Vito Minei (Suffolk County Department of Health Services) asked whether this information was posted at beaches? Marty replied that it is.
- Possible Vendors
Dr. James is talking with vendors and hopes to firm their commitments in the next few weeks. Discussions are on-going with Abraxis, Beacon Analytical, and Strategic Diagnostics.
- Experimental Plan
Plans have been outlined for both the Laboratory Testing and Environmental Sample Phases. The major concern is the LC-MS reference analyses, which are extremely expensive which will drive the laboratory testing effort.
- Schedule
Once peer review of the draft test/quality assurance plan (TQAP) has been completed, the TQAP can be approved. We are anticipating that testing will proceed in August.
- Coordination with *E. coli* and Total Coliform Detection Verification Test
The AMS Center is considering pulling this into the microcystin immunoassay test. There is efficiency in having two similar tests run at the same time, and takes advantage of co-funding and partnering. Right now, there are two technology vendors interested in this test: B2P and Early Warning.

Tom Gargan (U.S. Army) asked about the principles behind the B2P technology for *E. coli* and Total Coliform monitoring. Dr. James said there is a color change after filtration and incubation in the presence of violet red bile agar (VRBA) that originates in the cap of the sample container. Dr. Gargan also observed that Early Warning picks up both viable and nonviable bacteria.

In reference to the *E. coli* detection tests, Rick Sakaji (East Bay Municipal Utility District) asked if the testing will consider EPA's Alternate Test Procedure (ATP) protocols? Teresa Harten (EPA) said that she and John McKernan (EPA) recently met with EPA's Office of Ground Water and Drinking Water (OGWDW) to discuss changes that are in process with the Total Coliform Rule (TCR). Stakeholders commented that testing would be most useful if it is focused more towards drinking water and the TCR, rather than recreational water.

Vito Minei said that Suffolk Co. is interested in both microcystin and *E. coli*. His group is alarmed at the prevalence of microcystin, and monitors more than 200 beaches. He also asked about bacteroides testing. Tom Gargan said that their bacteroides program was no longer active, and had moved to *E. coli* and coliform detection in freshwater.

With regards to peer reviewers for this test, Rick Sakaji offered to review the *E. coli* documents, provided there is a focus on drinking water. Vito Minei offered to serve as a peer reviewer for the microcystin test. It was noted that Robin Oshiro of EPA's ATP program would potentially be interested in serving as a peer reviewer as well and her interest would need to be confirmed.

Testing Results for the BioTector TOC Analyzer

Max Lee, Dow, gave a presentation on why Dow Chemical chooses to use the BioTector. The stakeholders were able to follow the presentation on slides received before the teleconference. He covered the benefits of this analyzer, performance testing conducted by Dow, and an evaluation of instrument cost as compared to other systems.

Update on Current Verification Tests

Amy Dindal, Battelle, gave a comprehensive update on several on-going verification tests. The stakeholders were able to follow the presentation on slides received before the teleconference. She covered:

- ELISA Test Kits for Endocrine Disrupting Compounds (EDCs) in Water
- International ETV – Passive Groundwater Samplers
- Nitrate Sensors for Groundwater Monitoring
- *Cryptosporidium* Monitor
- Balloon Remote Sensing of Mixing Zones

Vito Minei offered to serve as a peer reviewer for the Nitrate Sensors test, and offered a New York site for field testing.

Vendor Inquiries

Amy Dindal led the discussion on the following technologies:

- Chemical Oxygen Demand
AquaDiagnostics has lost interest. However, Machery-Nagel, a German vendor that uses spectrophotometric treatment of wastewater, is interested in joint testing with the international ETV program. One stakeholder commented that an instrument based on chromium chemistry can't be used in Europe.

- Turbidimeters
The ATP program has expressed interest in developing a joint (ETV/ATP) protocol for testing this category of technologies that could be use to generate data for method compliance. An existing ETV TQAP for on-line turbidimeters prepared by Battelle would be used as a starting point (see <http://www.epa.gov/nrmrl/std/etv/vt-ams.html#Turbidimeters>)
- Vacuum distillation GC-MS
Vendor interest in looking at this technology for 1,4-dioxane in water, wastewater, and MTBE.
- Pipe locating technology
Technology to ascertain depth and location of underground pipes of water/wastewater. Alan Mearns (NOAA) asked that more information be sent about this technology.
- Passive groundwater samplers
At least two vendors have expressed interest in international testing of such samplers.
- ELISA for PAHs
This was an inquiry from Alan Mearns. PAHs have been found in oysters, shellfish, and fish as an environmental indication of contamination. Should the AMS Center consider evaluating ELISA test kits for PAHs (such as the RaPID assay being sold by Strategic Diagnostics)?

Stakeholders: what's on your radar screen? - Rachel Sell

Ken Wood (DuPont) inquired about on-line monitoring for extremely low levels (parts per trillion) of mercury in water. Ms. Dindal replied that all of the mercury monitoring that has been done by the AMS Center has been in air. P S Analytical and Arizona Instruments are some vendors who have applicability to water.

Recap of Priorities, Action Items, and Next Meeting - Rachel Sell

- The next teleconference will take place some time in September/October
- Microcystins reviewers—Vito Minei and Marty Link
- *E.Coli* reviewers – Rick Sakaji and Robin Oshiro (interest to be confirmed)
- Nitrate sensors—Vito Minei has agreed to be a peer reviewer; also offered test site if necessary.
- *Cryptosporidium* monitor—Panel discussion in next 4-6 months. Rick Sakaji/Lisa Olsen/Peter Tennant/Geoff Scott interested in serving on technical panel.
- Balloon remote sensing—Panel discussion in next 4-6 months. Lisa Olsen and Peter Tennant are interested in serving on technical panel.
- AMS Center staff will send out information to stakeholders for the following:
 - COD monitor
 - vacuum distillation
 - pipe locator
 - ELISA for PAHs

Adjourn